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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,158	09/28/2001	Yuichi Iikubo	GRLK-003	4089
21567	7590	08/06/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			PRICE, ELVIS O	
			ART UNIT	PAPER NUMBER
			1621	
DATE MAILED: 08/06/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/966,158	<b>Applicant(s)</b> IIKUBO ET AL.	
	<b>Examiner</b> Elvis O. Price	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27,39-61 and 89-103 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27,39-61 and 89-103 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Claims 1-26, 39-61 and 89-103 are pending in the application.

#### ***Information Disclosure Statement***

The information disclosure statements comply with the provisions of 37 CFR 1.97, 1.98 and MPEP02 § 609. They have been placed in the application file, and the information referred to therein have been considered as to the merits.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-26, 39-61 and 89-103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster et al. {US Pat. 5,057,634}.

Applicants claim, in brief, a process for preparing 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea) comprising, contacting a C-3 reactant with chlorine and hydrogen fluoride (HF) in the presence of a catalyst to form a C-3 product

comprising a C-3 perhalogenated compound; contacting the C-3 product with HF in the presence of a catalyst to form 2,2-dichloro-1,1,1,3,3,3-hexafluoropropane (CFC-216aa); contacting CFC-216aa with HF in the presence of a catalyst to form 2-chloro-1,1,1,2,3,3,3-heptafluoropropane (CFC-217ba); and contacting CFC-217ba with hydrogen in the presence of a catalyst to produce HFC-227ea.

Webster et al. teach a process in which a C-3 reactant is contacted with chlorine and HF in the presence of a catalyst to form a C-3 product comprising a C-3 perhalogenated compound and CFC-216aa; contacting CFC-216aa with HF in the presence of a catalyst to form CFC-217ba followed by contacting CFC-217ba with hydrogen in the presence of a catalyst to produce a mixture of HFC-227ea and hexafluoropropylene (see the Summary of the Invention; Col. 3, lines 20-43; Col. 4, lines 33-67; Col. 10, lines 13-39; Examples 29-42 and 47-61). The difference between the presently claimed invention and what the Webster et al. reference teaches is that the Webster et al. reference does not explicitly teach contacting the C-3 product, which results from the chlorofluorination step, with HF to produce CFC-216aa and the Webster et al. reference is primarily concerned with the production of hexafluoropropylene although HFC-227ea is coproduced as a by-product. However, Webster et al. teach that the less highly fluorinated by-products, contained in the C-3 product mixture which results from the chlorofluorination step, can be recycled in an effort to increase the yield of the desired intermediate (e.g., CFC-216aa or CFC-217ba) (see Col. 2, lines 11-24; Col. 3, lines 20-42 and Col. 5, lines 30-32) and that if palladium is used as the catalyst

in the hydrogenation step substitution of hydrogen for the chlorine atom contained in CFC-217ba intermediate would predominate (see Col. 10, lines 28-34).

It would have been *prima facie* obvious to one having ordinary skill in the art, in view of the teachings of the Webster et al. reference, to arrive at the presently claimed invention because Webster et al. teach a similar process for preparing HFC-227ea comprising contacting a C-3 reactant with chlorine and HF in the presence of a catalyst to form a C-3 product comprising a C-3 perhalogenated compound and CFC-216aa; contacting CFC-216aa with HF in the presence of a catalyst to form CFC-217ba followed by contacting CFC-217ba with hydrogen in the presence of a catalyst to produce a mixture of HFC-227ea and hexafluoropropylene. Reaction parameters such as temperature, mole ratios, contact time, etc., are obvious variables, which can be manipulated, by persons having ordinary skill in the art, to arrive at optimum conditions.

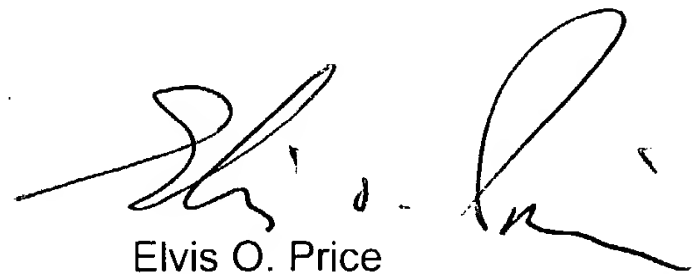
One having ordinary skill in the art, desiring to prepare HFC-227ea, would have been motivated to not only recycle less highly fluorinated by-products, which result from the chlorofluorination step (first reaction step), so as to obtain a greater yield of the CFC-216aa or CFC-217ba intermediates, taught in the Webster et al. process, but the skilled artisan would have also been motivated to use a palladium catalyst in the hydrogenation step so afford a greater production of the HFC-227ea product. The skilled artisan, desiring to arrive at other art recognizable alternatives for preparing HFC-227ea, which is useful as a fire extinguishant, refrigerant, blowing agent and propellant, would have been motivated to make the necessary modifications to the

Webster et al. process. Therefore the presently claimed invention would have been obvious to one having ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 571 272-0644. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571 272-0646. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.



Elvis O. Price

August 4, 2004